

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A system for allocating a supply of a component, the system comprising:

a [[1]]) a database containing information related to said component, said information describing the supply and changes to the supply, said information defining variables comprising:

$\omega_{CS}$ ,  $\omega_R$ ,  $\omega_M$ , and  $\omega_I$  representing weightings for customer service, revenue, margin, and inventory for said component,

$\gamma_{CS}$ ,  $\gamma_R$ ,  $\gamma_M$ , and  $\gamma_I$  representing scaling factors for customer service, revenue, margin, and inventory for said component,

$x_{it}$  is a binary variable,

$\delta_{it}$  representing a scaling factor to give preference for shipping orders on-time versus shipping late or early,

$\alpha_i$  representing a revenue associated with a demand  $i$ ,

$\beta_i$  representing a margin associated with said demand  $i$ ,

$c_j$  representing a standard cost of an item  $j$ ,

$u_{jkt}$  representing a quantity of consumed inventory,

$t_{jk}$  representing a quantity of issued inventory,

$I_{jt}$  representing an inventory of an item  $j$  at end of a time period  $t$ ,

$M$  representing a number of independent demands, and

$T$  representing a number of time periods; and

b [[2]]) a supply planner, ~~whereby said supply planner~~ that produces a supply plan using synchronized allocation through an objective function:

$$\max \left[ \omega_{cs} \gamma_{cs} \sum_{i=1}^M \sum_{t=1}^T \delta_{it} x_{it} + \omega_R \gamma_R \sum_{i=1}^M \left( \alpha_i \sum_{t=1}^T x_{it} \right) + \omega_M \gamma_M \sum_{i=1}^M \left( \beta_i \sum_{t=1}^T x_{it} \right) \right. \\ \left. - \omega_I \gamma_I \left( \sum_{j=1}^M \left( c_j \sum_{t=1}^T I_{jt} \right) + \sum_{j=1}^M \left( c_j \sum_{k=1}^M \left( t_{jk} - \sum_{t=1}^T u_{jkt} \right) \right) \right) \right]$$

2. (cancelled)

3. (original) The system of claim 1 further comprising a resource optimizer, wherein said resource optimizer uses matched sets logic.

4. (currently amended) The system of claim 1 further comprising a product attribute defining tool.

5. (currently amended) The system of claim 4, wherein said product attribute defining tool allows a user to define a smartbill, whereby said smartbill defines the component by using an engineering specification.

6 (original) The system of claim 1 further including a constraint-based master planner, whereby said constraint-based master planner allows a user to specify one or more goals to be considered by the supply planner.

Q2 7. (currently amended) The system of claim 6, wherein said goals comprise the maximization of revenue, margin, inventory, or and customer service.

8. (original) The system of claim 1 further comprising a product change analyzer, wherein said product change analyzer compares the effects of a change in the supply at different times.

9. (original) The system of claim 1 further comprising a comparer, wherein said comparer assesses differences in a supply plan for the supply of the component and a supply plan for a modified supply of the component.

10. (original) The system of claim 1 further comprising a resource requirements planner, wherein said resource requirements planner suggests a change in the supply to address a shortage identified by the supply planner.

11. (original) The system of claim 1 further comprising a finite resource planner wherein said finite resource planner suggests an optimal use of the supply to address a shortage identified by the supply planner.

12. (currently amended) The system of claim 1 further comprising a customer promiser, wherein said customer promiser

1) determines a remainder of the supply following implementation of the supply plan, and

2) accesses the feasibility of a new order using on the remainder.

13. (original) The system of claim 1 further comprising an interactive master scheduler.

14. (original) The system of claim 1, wherein said database comprises input data, user-specified data, and output data.

15. (currently amended) A method for allocating a supply of a component, the method comprising the steps of:

a) forming a database containing information related to said component, said information describing the supply and changes to the supply, said information defining variables comprising:

$\omega_{CS}$ ,  $\omega_R$ ,  $\omega_M$ , and  $\omega_I$  representing weightings for customer service, revenue, margin, and inventory for said component,

$\gamma_{CS}$ ,  $\gamma_R$ ,  $\gamma_M$ , and  $\gamma_I$  representing scaling factors for customer service, revenue, margin, and inventory for said component,

$x_{it}$  is a binary variable,

$\delta_{it}$  representing a scaling factor to give preference for shipping orders on-time versus shipping late or early,

$\alpha_i$  representing a revenue associated with a demand  $i$ ,

$\beta_i$  representing a margin associated with said demand  $i$ ,

$c_j$  representing a standard cost of an item  $j$ ,

$u_{ikt}$  representing a quantity of consumed inventory,

$l_{ik}$  representing a quantity of issued inventory,

$I_{it}$  representing an inventory of an item  $j$  at end of a time period  $t$ ,

$M$  representing a number of independent demands, and

$T$  representing a number of time periods; and

b [[2]] producing a supply plan using synchronized allocation through an objective function:

$$\max \left[ \omega_{cs} \gamma_{cs} \sum_{i=1}^M \sum_{t=1}^T \delta_{it} x_{it} + \omega_R \gamma_R \sum_{i=1}^M \left( \alpha_i \sum_{t=1}^T x_{it} \right) + \omega_M \gamma_M \sum_{i=1}^M \left( \beta_i \sum_{t=1}^T x_{it} \right) \right. \\ \left. - \omega_I \gamma_I \left( \sum_{j=1}^M \left( c_j \sum_{t=1}^T I_{jt} \right) + \sum_{j=1}^M \left( c_j \sum_{k=1}^T \left( t_{jk} - \sum_{t=1}^T u_{jkt} \right) \right) \right) \right]$$

16. (original) The method of claim 15, wherein said information defines the component using an engineering specification.

17. (cancelled)

Q2 18. (original) The method of claim 15 further comprising the step of optimizing the supply using matched sets logic.

19. (original) The method of claim 15 further comprising the step of specifying one or more goals to be considered in the step of producing a supply plan.

20. (currently amended) The method of claim 15 further comprising the steps of:  
a [[1]] modifying said database to reflect a change in the supply at a first time;  
b [[2]] preparing a first supply plan for said first modified database;  
c [[3]] modifying said database to reflect the change in the supply at a second time;  
d [[4]] preparing a second supply plan for said second modified database; and  
e [[5]] comparing the effects of said first and said second supply plans.

21. (currently amended) The method of claim 15 further comprising the steps of  
a [[1]]) modifying said database to reflect a change in the supply;  
b [[2]]) preparing a modified supply plan for said modified database; and  
c [[3]]) comparing the effects said supply plan and said modified supply plan.
22. (currently amended) The method of claim 15 further comprising the steps of:  
a [[1]]) identifying a shortage in the supply created in said supply plan; and  
b [[2]]) modifying use of said supply to address said shortage.
23. (currently amended) The method of claim 15 further comprising the steps of:  
a [[1]]) identifying a shortage in the supply created in said supply plan; and  
b [[2]]) modifying said supply plan address said shortage.
24. (currently amended) The method of claim 15 further comprising the steps of  
a) determining a remainder of the supply following implementation of the supply plan, and  
b) accessing the feasibility of a new order using ~~on~~ the remainder.
25. (currently amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform method steps of:  
a [[1]]) forming a database containing information related to a supply of a component, said information describing the supply and changes to the supply, said information defining variables comprising:  
 $\omega_{CS}$ ,  $\omega_R$ ,  $\omega_M$ , and  $\omega_I$  representing weightings for customer service, revenue, margin, and inventory for said component,  
 $\gamma_{CS}$ ,  $\gamma_R$ ,  $\gamma_M$ , and  $\gamma_I$  representing scaling factors for customer service, revenue, margin, and inventory for said component,  
 $x_{it}$  is a binary variable,  
 $\delta_{it}$  representing a scaling factor to give preference for shipping orders on-time versus shipping late or early,  
 $\alpha_i$  representing a revenue associated with a demand  $i$ ,  
 $\beta_i$  representing a margin associated with said demand  $i$ ,  
 $c_i$  representing a standard cost of an item  $i$ .

$u_{jkt}$  representing a quantity of consumed inventory,

$t_{jk}$  representing a quantity of issued inventory,

$I_{jt}$  representing an inventory of an item  $j$  at end of a time period  $t$ ,

$M$  representing a number of independent demands, and

$T$  representing a number of time periods;

b [[2]]) using synchronized allocation and matched sets logic to produce a supply plan for said supply through an objective function:

$$\max \left[ \omega_{cs} \gamma_{cs} \sum_{i=1}^M \sum_{t=1}^T \delta_{it} x_{it} + \omega_R \gamma_R \sum_{i=1}^M \left( \alpha_i \sum_{t=1}^T x_{it} \right) + \omega_M \gamma_M \sum_{i=1}^M \left( \beta_i \sum_{t=1}^T x_{it} \right) \right. \\ \left. - \omega_I \gamma_I \left( \sum_{j=1}^M \left( c_j \sum_{t=1}^T I_{jt} \right) + \sum_{j=1}^M \left( c_j \sum_{k=1}^T \left( t_{jk} - \sum_{t=1}^T u_{jkt} \right) \right) \right) \right];$$

a<sup>2</sup>; and

c [[3]]) allocating said supply using said supply plan.

26. (new) The program storage device readable of claim 25 further comprising a product attribute defining tool that allows a user to define the component by using an engineering specification.

a<sup>3</sup> 27. (new) The program storage device readable of claim 25, wherein the performed method steps further comprise:

- a) identifying a shortage in the supply created in said supply plan; and
- b) modifying said supply plan address said shortage.